



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2003GA43B

Title: Assessment of In-Stream Processes in the Development of Sediment TMDLs for Urban Streams

Project Type: Research

Focus Categories: Sediments, Non Point Pollution, Surface Water

Keywords: fluid flow, hydraulics, instream flow, river beds, rivers, sedimentation, sediment load, sediment TMDL, nonpoint pollution, urban hydrology

Start Date: 03/01/2003

End Date: 02/28/2005

Federal Funds Requested: \$18000.00

Matching Funds: \$36000.00

Congressional District: 5th

Principal Investigators: Sturm, Terry (Georgia Institute of Technology)

Abstract: Sediment loads and water quality are inextricably linked in Georgia streams, particularly in urban areas in the piedmont region where fine-grained sediments contribute turbidity in the water column and deposition in downstream areas. Urbanization results in increased washload to the stream due to runoff from construction sites that are inadequately protected by erosion control measures. In addition, the runoff volume and peak discharge increase due to an increase in impervious area on the watershed. The result is a loss of equilibrium in the sediment regime of the stream. The consequences include bank erosion, degradation, loss of aquatic habitat and spawning areas, inhibition of photosynthesis due to turbidity in the water column, increased water treatment costs, loss of reservoir storage capacity, and transport of contaminants associated with fine sediments. The resulting impairment of water quality has to be addressed with respect to compliance with section 303(d) of the Clean Water Act. In particular, where excess sediment loads threaten the biological integrity of streams, TMDLs (total maximum daily loads) must be established to quantify allowable sediment loads for the purpose of controlling the sources of water quality impairment. The development of TMDLs for sediment is complex because of various in-stream processes that contribute to the problem as well as watershed sources of sediment. The objectives of the proposed research are to develop a procedure for: (1) measuring sediment loads in streams due to

both watershed sediment yield and in-stream processes; and (2) evaluating the contribution of in-stream processes such as bed and bank erosion to the sediment budget of stream reaches selected for establishment of TMDLs. The objectives will be achieved through a combination of field measurements on an urban stream and numerical modeling of sediment loads and stream stability.

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